

Claims

What is claimed is:

1. An adsorbent material based on crosslinked, porous imidazole-divinylbenzene copolymers, said adsorbent material being formed by specific radical suspension polymerization of a monomer mixture in the presence of air and/or oxygen, a salt, and an inert substance, said adsorbent material comprising at least 50 weight percent divinylbenzene crosslinker and 4 to 30 weight percent of an imidazole derivative, said adsorbent material being highly crosslinked and highly porous, said adsorbent material having a spherical shape and specific characteristics of surface, pore size distribution, pore diameter, and particle size range, for application in blood-, blood plasma-, and albumin purification processes.
2. An adsorbent material of claim 1 where the radically polymerizable imidazole derivatives are 1- or 4-substituted vinyl-, allyl- or propenylimidazoles or mixtures thereof.
3. An adsorbent material of claim 1 where the divinylbenzene copolymer comprises 50 weight % to 85 weight % of isomeric divinylbenzene and 5 weight % to 40 weight % of isomeric ethylvinylbenzene.
4. An adsorbent material of claim 1 having a specific surface from 200 m²/g to 900 m²/g.

5. An adsorbent material of claim 1 having a total pore volume from 1.0 to 2.0 cm³/g where 1 g of the material comprise up to 0.3 cm³ micropores, up to 1.2 cm³ mesopores, and up to 0.5 cm³ macropores.
6. An adsorbent of claim 1 comprising predominantly spherical particles having a particle size from 1 µm to 300 µm, preferably 50 µm to 200 µm or 1 µm to 50 µm.
7. A method of suspension polymerization to produce the adsorbent material of claim 1 where the aqueous phase comprises 5 weight % to 25 weight % of a salt and 0.5 weight % to 5 weight % of a suspension stabilizer, the organic phase comprises 25 weight % to 50 weight % of an inert substance, and the polymerization is conducted in the presence of air and/or oxygen.
8. A method of claim 7 where the inert substance preferably comprises toluene, ethyl acetate, butyl acetate, dichlorethane, carbon tetrachloride, exclusively or in mixture.
9. A method of claim 7 where the suspension stabilizer preferably comprises poly(vinyl alcohol) or methyl cellulose or hydroxyethyl cellulose or calcium phosphate or aluminium hydroxide or magnesium hydroxide.
10. Application of the adsorbent materials of claims 1 to 9 for blood purification in plasma- or blood perfusion processes.

11. Application of the adsorbent materials of claims 1 to 9 in the Molecular Adsorbent Recirculating System (MARS).

12. Application of the adsorbent materials of claims 1 to 9 as a sorbent for bilirubin and bile acids.